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(54) Dispenser for solid flowable materials, e.g. peanuts

(57) A dispenser for solid flowable materials which is intended to be secured to a work bench by adhesive means. The dispenser can be re-charged e.g. with peanuts, independently of a cash lock. Peanuts from hopper 2 are dispensed in quantities regulated by rotating plate 66 with apertures 65, on turning handle 40 which is coin-freed. Cups to receive nuts may be stored in container 60. The adhesive means may be a permanently adhesive polymer, and may have less adhesion at higher temperatures to facilitate its removal.

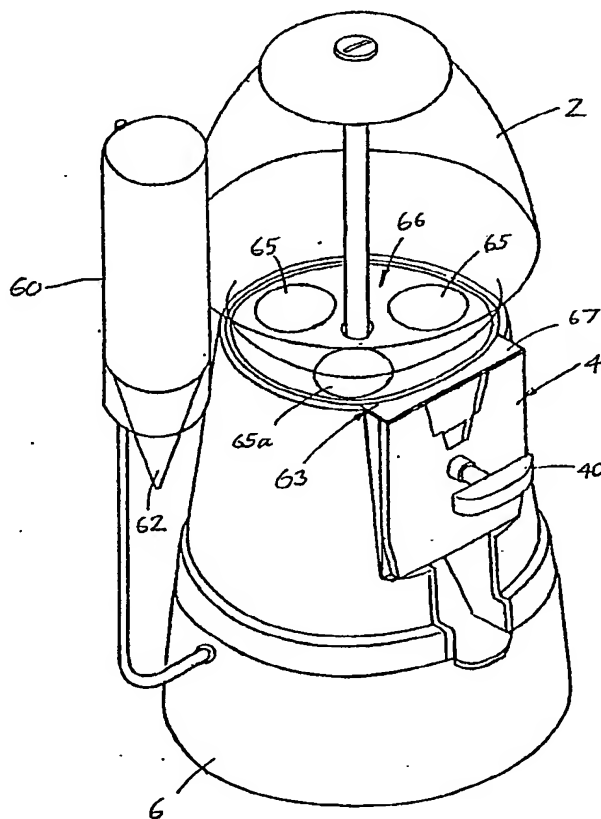
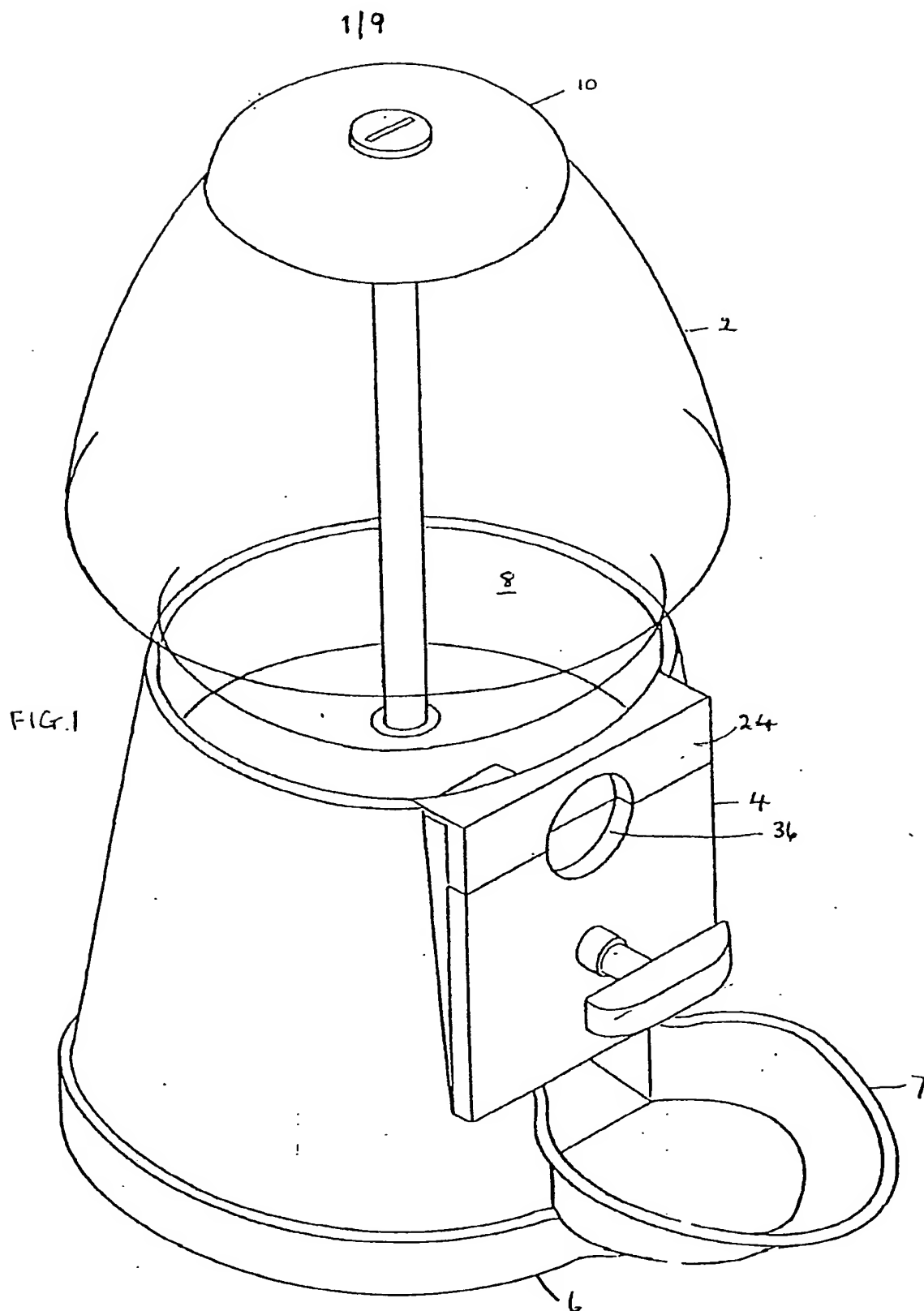


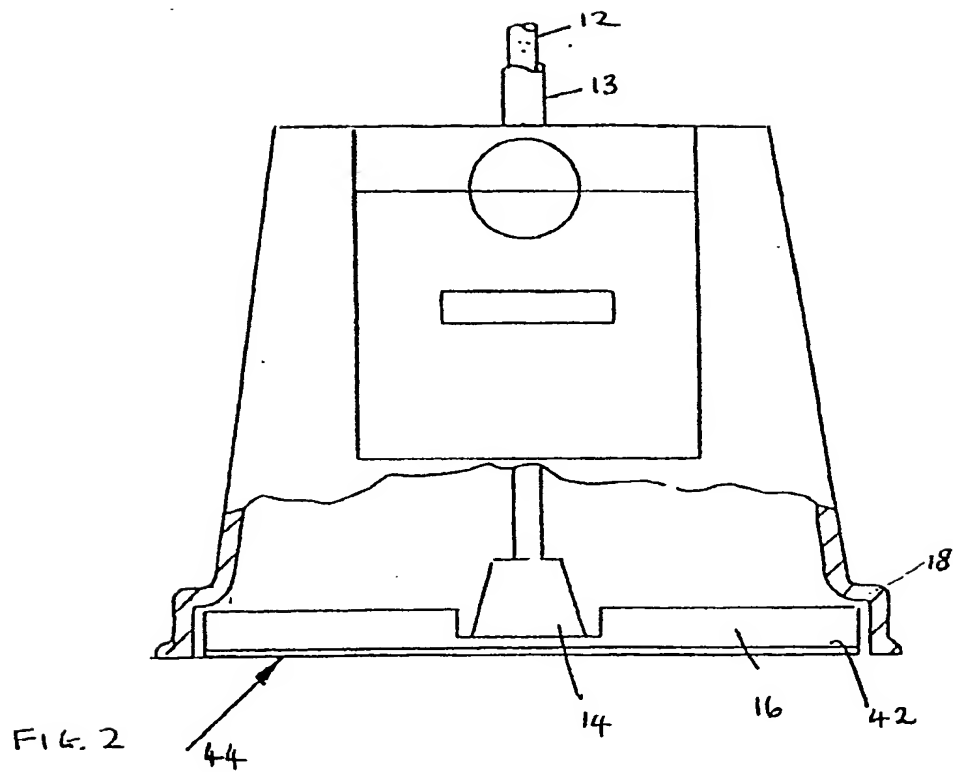
FIG. 4

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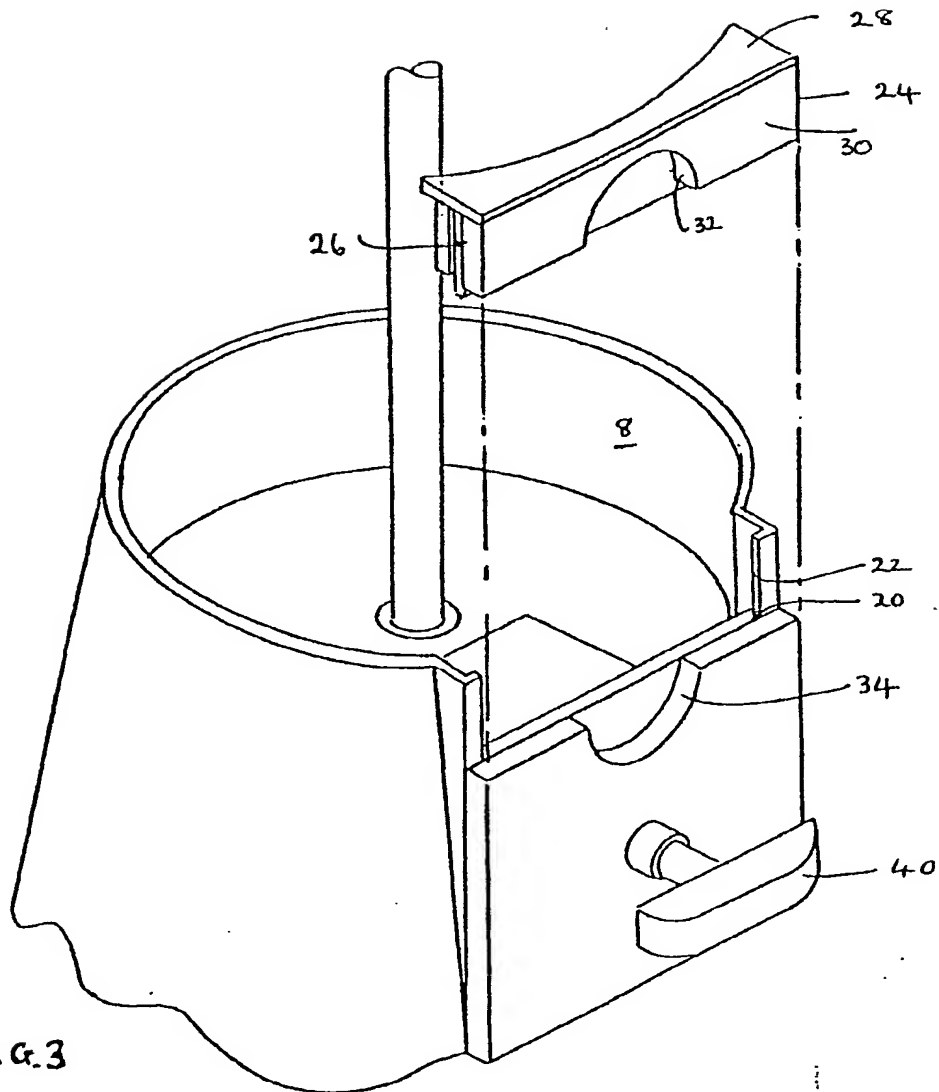
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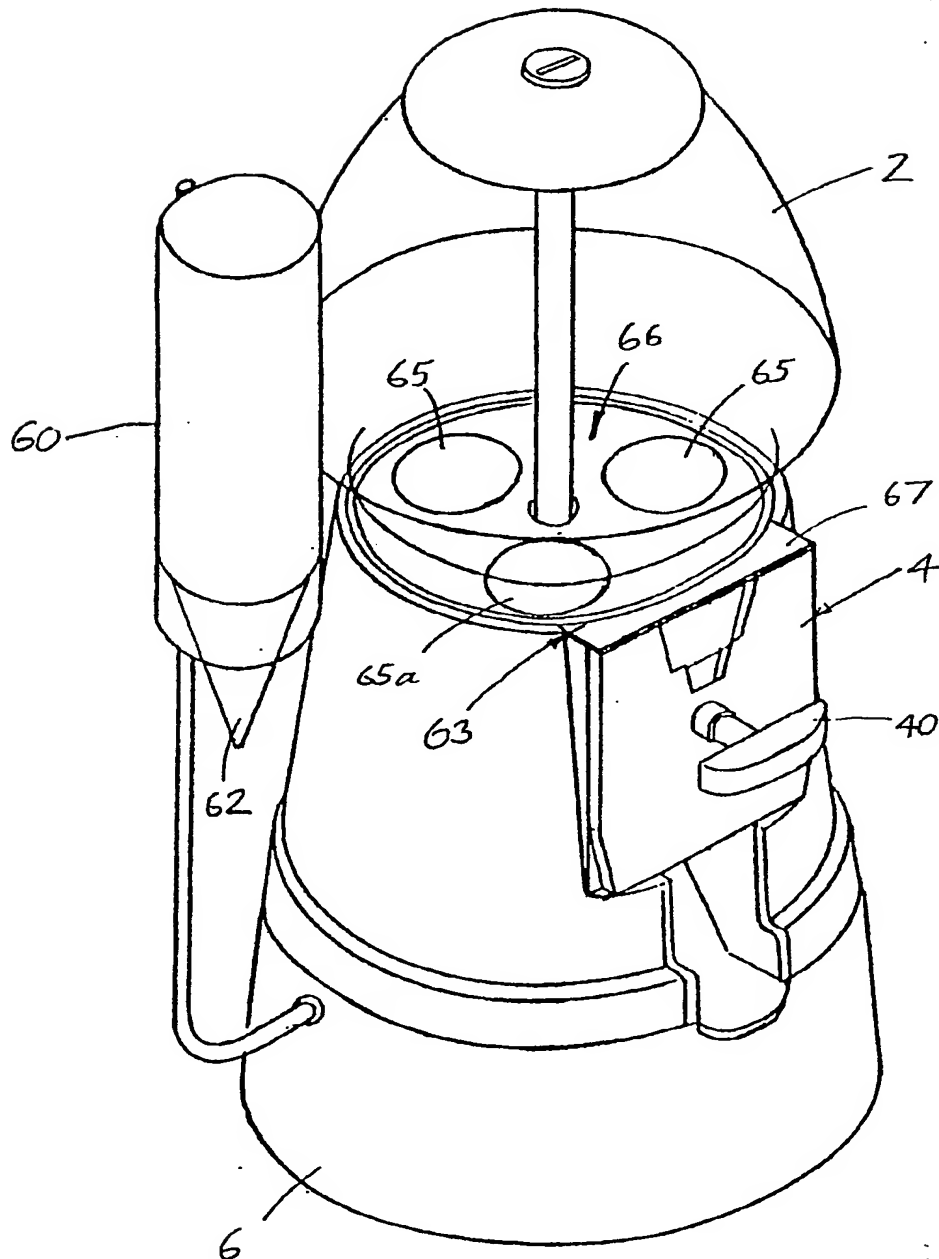
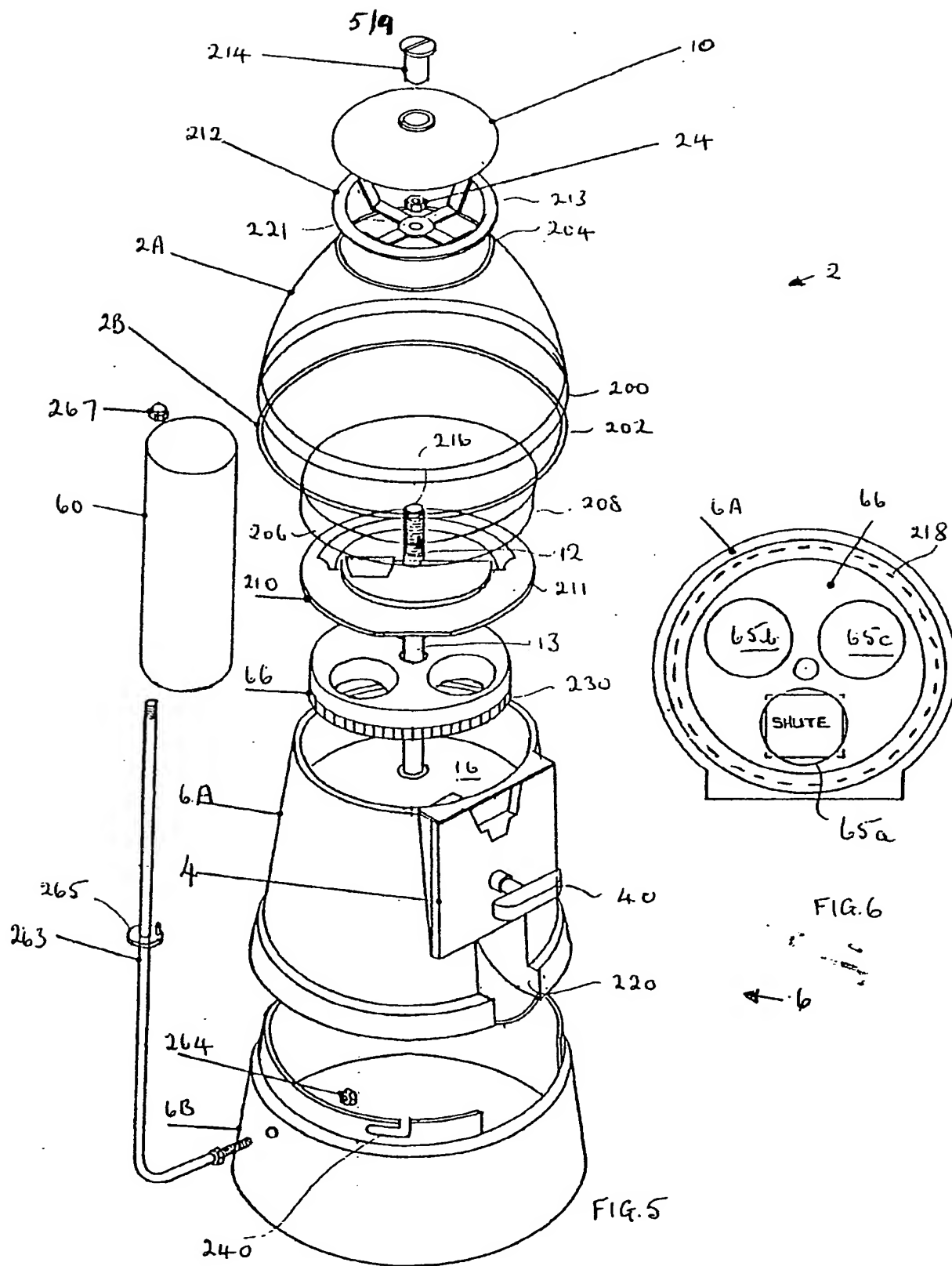
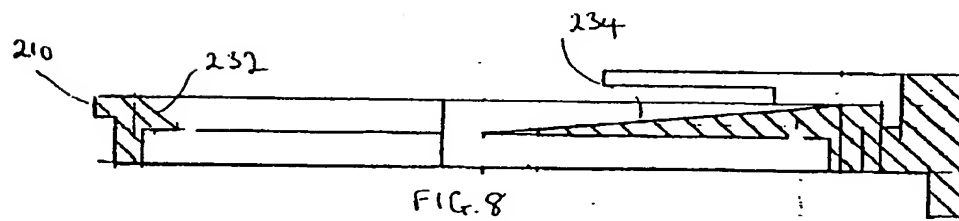
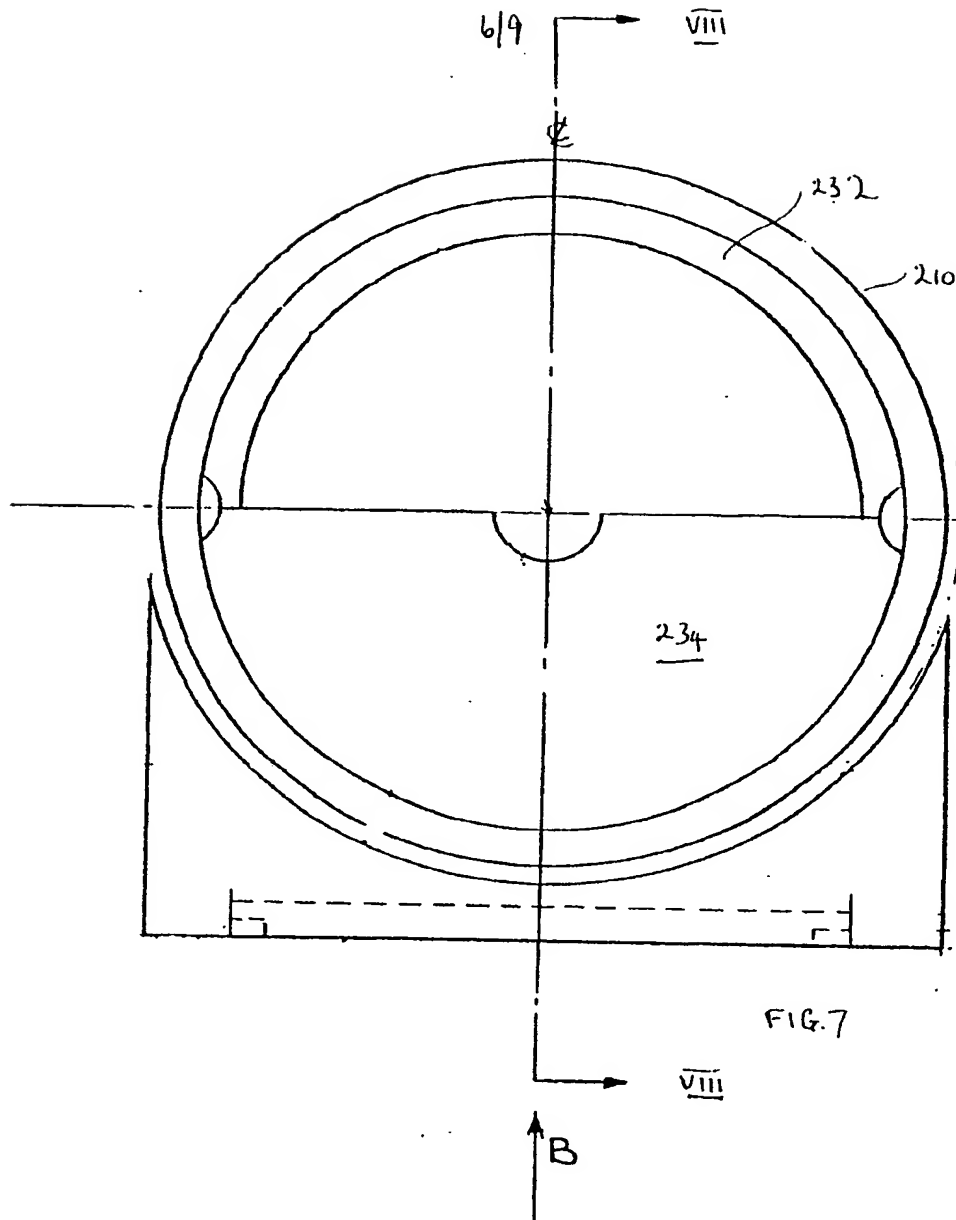


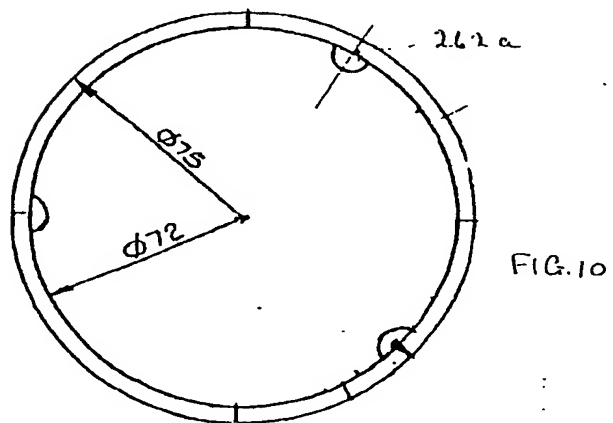
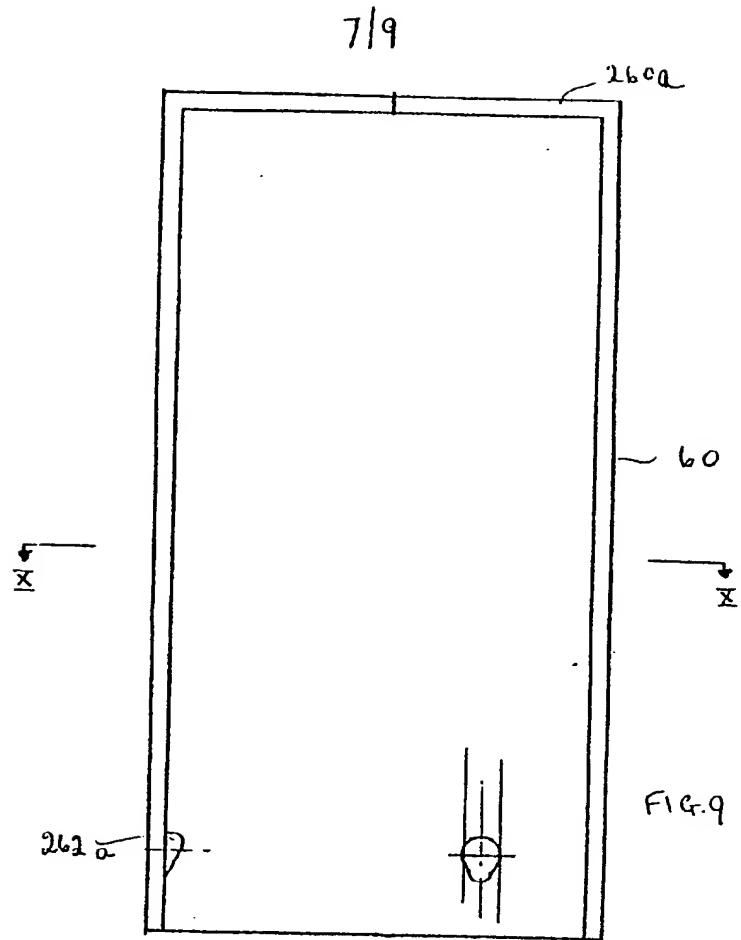
FIG. 4

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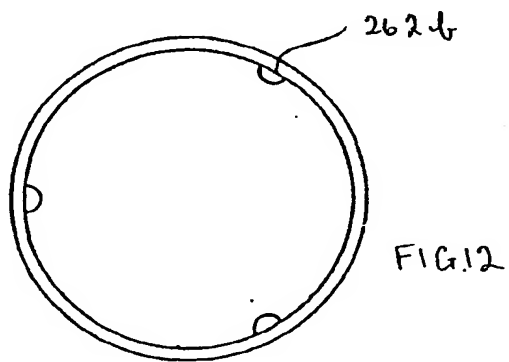
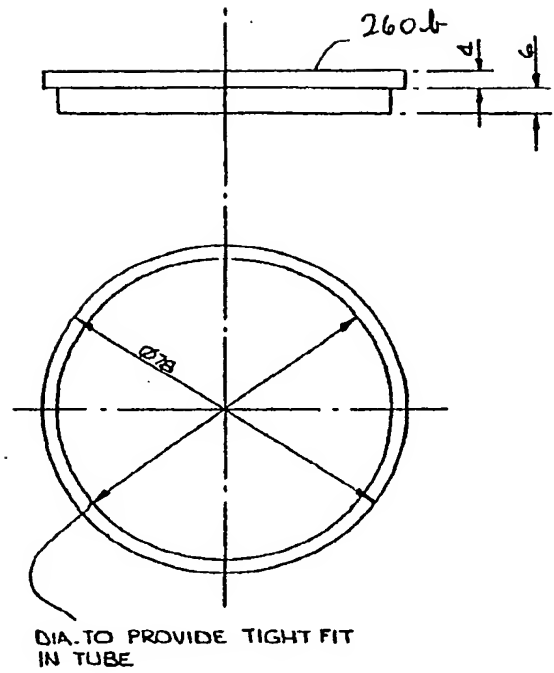
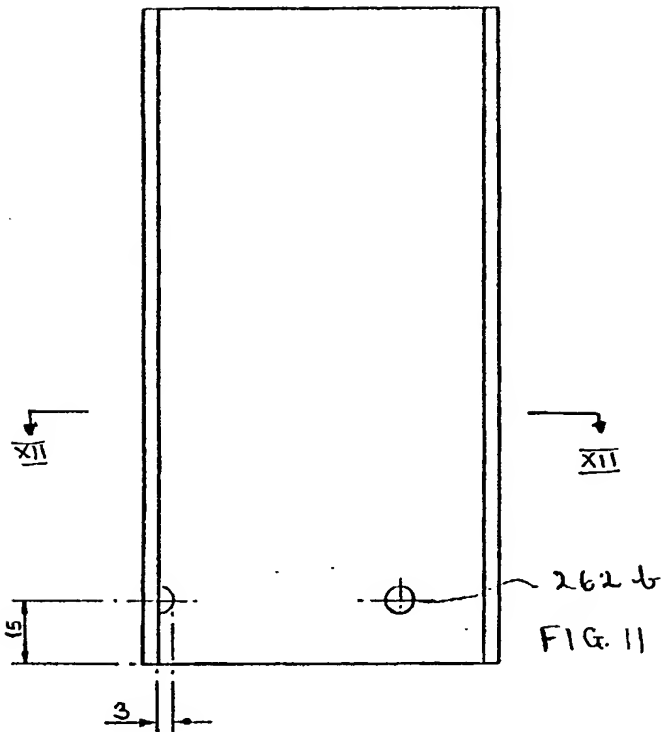






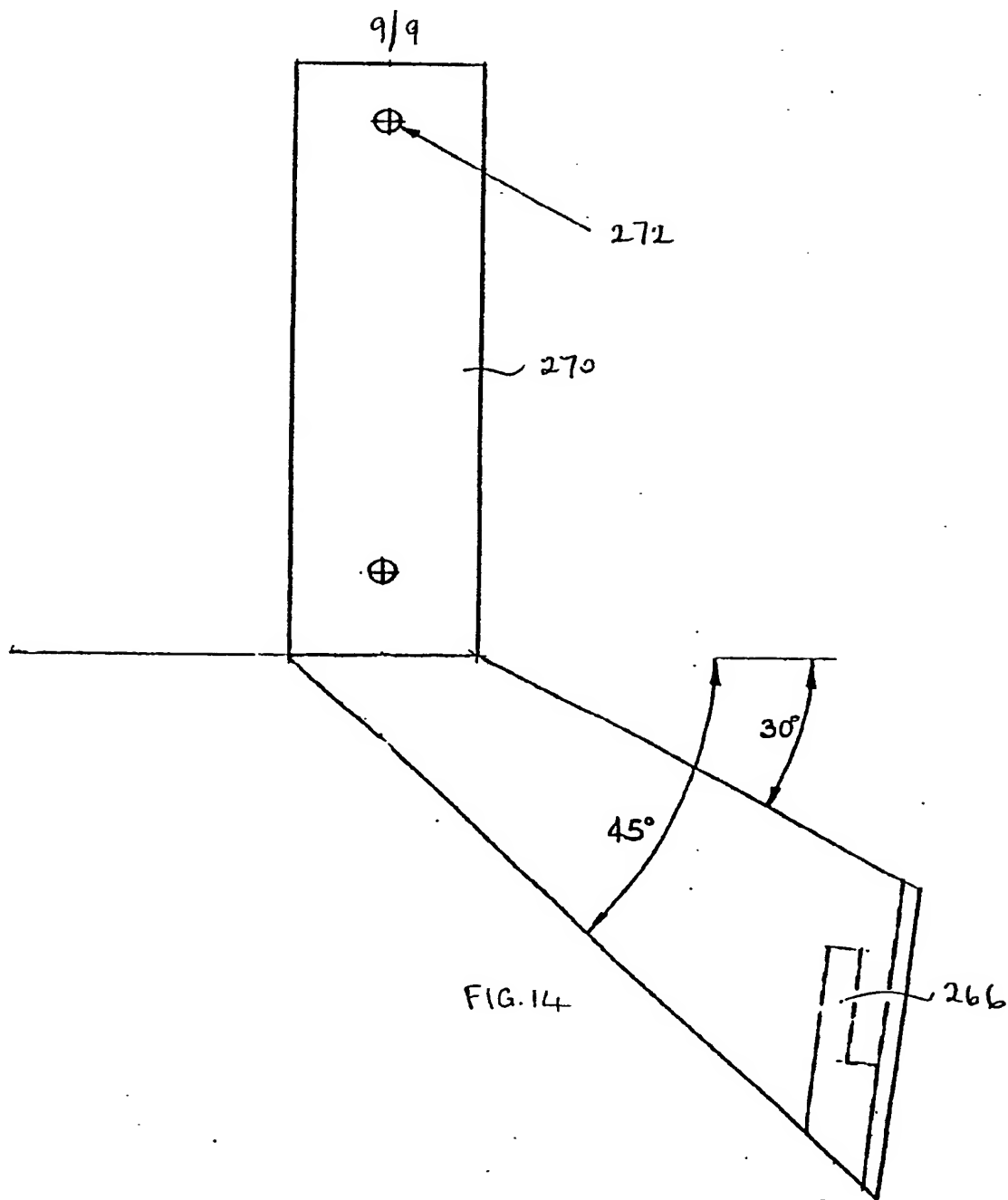


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## SPECIFICATION

## Dispenser

- 5 This invention relates to a dispenser, and in particular to a dispenser for solid flowable materials. Many materials, particularly edible materials such as sugar, nuts and certain sweets need to be stored hygienically and dispensed in regulated quantities.
- 10 Such materials are often used both privately in the home and commercially as in restaurants. Dispensers previously proposed have often been mounted on a table top, counter or the like work bench and one object of the present invention is to
- 15 provide an improved means for securing such a dispenser for increased safety and to prevent surreptitious removal.

- According to one aspect of our invention we provide a dispenser for solid flowable materials comprising a hopper in which the materials can be stored, flow control means to regulate the flow of materials from the hopper and a base member carrying the hopper and the flow control means, the base member being mountable non-removably on a
- 20 work bench by adhesive means. Usefully the adhesive means is e.g. temperature dependent, such that the adhesive means provides less adhesion between the base member and the work bench at an elevated temperature i.e. significantly above
- 25 ambient, the adhesive means so preventing unauthorised removal of the dispenser at room temperatures, but permitting the dispenser to be re-sited by the dispenser proprietor, after the adhesive has been heated. The adhesive means is
- 30 preferably a pad of material having one side adhered to the base member and having its other side provided with an adhesive coating.

- Preferably the flow control means acts to permit a predetermined quantity of the material to be
- 40 dispensed at each actuation; but in an alternative embodiment the volume of material dispensed could depend on the time the flow control means is held in the active position. The flow control means can be manually operated, but for commercial use
- 45 separate locking means may be provided to prevent such manual operation until a coin of an appropriate denomination or other token has been inserted, and as a further feature of our invention the flow control
- 50 means has a coin or token slot which can be fully exposed only after removal of the hopper from the base so as to permit jammed coins or tokens to be removed.

- One known coin released vending machine is that of U.K. Patent Application 414517, which has a glass
- 55 container for the goods to be dispensed which is locked in position when charged, and unlocked only by access to a door or the like, for example at the back of the machine, which is also the door used for collecting the money. This is inconvenient, in that
- 60 only the proprietor of the machine or a trusted colleague can re-charge the machine; and in that the container is re-charged through a container opening normally closed by a lid held against the container by a tension member located in a protective tube, the lid
- 65 being subject to serious over-tightening both

because access to the tension member through the door is unnecessarily difficult and so often clumsy and because the tension member may lodge against the protective tube before suddenly releasing itself with a sudden and perhaps disastrous increase in lid to container loading.

- Thus according to yet a further feature of the invention we propose a dispenser for solid flowable materials comprising a hopper means adapted to
- 70 hold a quantity of the materials to be dispensed, flow control means to regulate the flow of materials from the hopper and thus the rate of reduction of the quantity of materials in the hopper, and a base member carrying the hopper and flow control
- 75 means, the control means being token releasable, passageway means connecting the control means and the base member whereby the said tokens can pass into the base member, lock means on the base member, the tokens being removable from the base
- 80 member only after release of the lock means, and replenishment means independent of the release of the lock means to increase the said quantity of materials. Preferably the replenishment means includes re-charging the existing container.

- 90 According to another aspect of the invention there is provided, a dispenser for solid flowable materials comprising a hopper in which the materials can be stored, flow control means to regulate the flow of materials from the hopper, a base member carrying
- 95 the hopper and the flow control means, a token-releasable locking means which permits operation of said flow control means, and a retainer for the locking means which locates between the locking means and the hopper to prevent removal of
- 100 said locking means, until the hopper is removed.

- I also propose a transparent hopper of separate self-supporting parts, the upper part in use having an annular collar which fits closely but releasably over an open rim of the lower part. This modification aids
- 105 the manufacture of the parts whilst still inhibiting the access of e.g. foreign matter likely to contaminate materials in the hopper.

- The invention will now be described by way of example with reference to the accompanying
- 110 drawings, in which:

*Figure 1* is a perspective view of a dispenser;

*Figure 2* is a view, partly cut away and partly in section of the base;

- Figure 3* is a perspective view of part of the base member, without the hopper and with the top plate, and with the top plate for the flow control means
- 115 lifted of the base member;

*Figure 4* is a perspective view of a modified dispenser;

- Figure 5* is an exploded, perspective view of a dispenser according to my invention;

*Figure 6* is a plan view from immediately above the feeder ring;

*Figure 7* is a plan view of a feeder ring;

- Figure 8* is a section on the line VIII-VIII of *Figure 7*;

*Figure 9* is a side view of one embodiment of cup holder;

*Figure 10* is a view on the line X-X of *Figure 9*;

- Figure 11* is a side view of another embodiment of
- 130 cup holder;

*Figure 12* is a view on the line XII-XII of *Figure 11*;  
*Figure 13* is a side view of a replaceable cover for  
the embodiment of *Figure 11*; and

*Figure 14* is a side view of another embodiment for  
fitting the cup holder to the base part.

The dispenser has a transparent hopper 2, flow  
control means 4 and a base member 6 carrying  
material receptacle 7.

Hopper 2 fits inside an upstanding wall 8 of the  
base member 6, which is held removably but  
securely by cap 10 clamped as seen in *Figure 2* by rod  
12 screw-threaded into block 14 integral with base  
plate 16.

To prevent contact by the material in hopper 2 with  
rod 12, a sleeve 13, conveniently of stainless steel, is  
fitted around rod 12. In use, base plate 11 abuts  
shoulder 18 of the base member 6, the arrangement  
being such that when rod 12 is unscrewed from block  
14 the user has three options available – to lift the cap  
10 to refill hopper 2; to remove hopper 2 from the  
base member 6; and to remove the base member 6  
from base plate 16. One or other of these latter two  
options may be required to service the flow control  
means 4. However, in an alternative embodiment,  
base plate 16 may be integral with or secured to base  
member 6.

Flow control means 4 has slotted sides 20 slidable  
on inwardly directed edges 22 of the base member 6.  
Edges 22 are of greater length than sides 20 to  
provide a space for a top plate 24 which also has  
slotted sides 26 slidable on the edges 22. Top plate  
24 has an upper surface 28 (as seen in *Figure 1* and  
*Figure 3*) which continues and fits flush with the  
internal and upper surfaces of the upstanding wall 8;  
and an outer surface 30 having a cut-out 32 which  
matches a corresponding cut-out 34 in the flow  
control means 4 to form a circular coin or counter  
receiving aperture 36; though in another  
embodiment the aperture could be a circular to  
receive a non-circular coin or counter. Top plate 24  
can be removed, as seen in *Figure 3* following  
removal of hopper 2 to permit access to the flow  
control means 4, for instance to remove a jammed  
coin from the aperture.

In a further embodiment the material receptacle 7  
can be slidably fitted on extensions of the inwardly  
directed edges 22.

The flow control means 4 includes a  
manually-operated handle 40, which can only be  
rotated when a locking mechanism (not shown) is  
released by a coin or counter correctly inserted in the  
aperture 36. Rotation of the handle 40 permits a  
measured quantity of material to be dispensed from  
the hopper 2 into the material receptacle 7 in known  
manner such as by direct rotation of a material  
carrier pocket through 180 degrees with handle 40,  
or by indirect rotation of a plate having an edge gear  
engageable by a gear wheel on handle 40 to bring  
one or more open-ended material carrier pockets  
into alignment with chute connecting with the  
material receptacle 7; though in another  
embodiment, suitable for home use, turning the  
handle 40 can permit the material to flow from  
hopper 2 to receptacle 7 until the desired quantity  
has been dispensed whereupon the handle is again

turned or turned further to cut off extra flow.

The base plate 16 has a flat under-surface 42 to  
which a double-sided self adhesive mounting pad 44  
can be affixed, whereby the base plate 12 and thus  
the dispenser can be secured to a work bench such  
as a table or restaurant counter; though in another  
embodiment another dispenser surface is used. By  
so fixing the dispenser in a central location, the  
dispenser can be kept in view, for instance to allow  
ready observation of the need for additional  
materials e.g. peanuts as by re-charging the existing  
hopper; in a commercial environment a single  
dispenser is often needed to which all customers can  
have access.

With a centrally disposed unit, attempts to operate  
the dispenser with coins of a lower or different  
denomination are also more easily observed by the  
establishment's staff.

Whilst we prefer base plate 16 to have a flat  
under-surface 42, clearly this under-surface 42 can  
have any desired shape, for instance to fit over the  
edge of a counter rather than merely on top.

It is to be understood that by the term "work  
bench" in this specification we intend any surface to  
which the dispenser can conveniently be affixed.

In *Figure 4* parts corresponding to parts in *Figures*  
1 to 3 have the same reference numerals. The base  
member 6 carries a holder 60 for cups 62 so that the  
user has a convenient supply of cups adjacent the  
dispenser. Instead of causing a top plate 24 to overlie  
the flow control means 4, the latter is held in place by  
an insert 63 which forms a chute (not shown) to  
guide material into an adjacent aperture 65a in a  
rotatable plate 66 formed with two further apertures  
65. The plate is rotated by the handle 40 to dispense  
material into the receptacle.

The insert 63 has a flange 67 which overlies the  
flow control means 4 and is sandwiched between the  
hopper 2 and the flow control means 4 to hold the  
latter in place.

In the embodiment of *Figure 5*, hopper 2 is in the  
form of a spherical bowl, having an upper part 2A  
with a depending skirt 200 which fits over and  
around a peripheral flange 202 on lower hopper part  
2B. The upper hopper part 2A has a material  
receiving opening 204 normally closed by cap 10.  
The lower hopper part 2B has a material dispensing  
opening 206, bounded by periphery 208. In use,  
periphery 208 seats on feeder ring 210, whilst cap 10  
seats on bowl retaining ring 212, the rings 210, 212  
being of a synthetic resinous material with flexible  
ledges 211, 213 so as to be better able to conform to  
any irregularities in the engaged hopper parts. The  
hopper parts 2A, 2B are held together and against the  
rings 212, 210 and specifically against ledges 211,  
213 by the cap retaining nut 214 which engages the  
threaded end 216 of rod 12. Rod 12 is non-rotatably  
mounted on base plate 16 and is surrounded by a  
protective sleeve 13. The bowl retaining ring 212 has  
a central opening 221 which fits around protective  
sleeve 13, and a lock nut 24. Tightening of nut 214  
presses the hopper parts 2A, 2B downwardly against  
feeder ring 210 which seats on shoulder 218 of upper  
base part 6A, so that the spherical bowl is largely  
protected against the ingress of foreign matter.

The flow control means includes a manually-operated handle 40, which as in my embodiments intended for commercial applications can only be rotated when a locking mechanism (not shown) is released by a coin (or equivalent counter) correctly inserted by the user. The material e.g. in aperture 65a in rotatable plate 66, can be discharged through chute 220. Handle 40 carries a star gear (not shown) which engages edge gear 230 in plate 66. To avoid the need to rotate handle 40 by more than one wrist action I have provided, in addition to aperture 65a, further identical apertures 65b, 65c; since however there will now be a range of angles at which an aperture can simultaneously be in register with both chute 220 and material dispensing opening 206 so that the chute and material dispensing opening are in direct communication, I have in addition provided a feeder ring 210 which directs the initial charge to each aperture to its rear side (when viewed in the direction of rotation) to limit or avoid the refilling of the aperture over this range of angles. It will be understood that the dispensing of certain materials is subject to inspection e.g. by the Weights and Measures Authorities or Trading Standards Officers, and it is essential therefore that the correct weight or volume be dispensed in accordance with the size of the apertures, without seeking to make allowance for the additional variable of the restocking an aperture during an actual discharge, and which may result in occasional short weights or regular over-weights being dispensed.

The feeder ring 210 can include angled sections 232, 234 to help guide the material towards the exposed aperture to be filled, to help prevent clogging of the material in the material dispensing opening 204.

In an alternative embodiment, I can replace the apertures 65a, 65b, 65c which carry the material to the chute, by three blades which drive the material towards the chute.

Lower base member 6B has three bayonet slots 240, which three pins (not shown) projecting radially-inwardly from flange 242 of upper base member 6A engage. One of the pins can itself be engaged by a hook rotatable from an inoperative position, to an operative position in which the pin and hook are in locking engagement to prevent separation of upper base member 6A from lower base member 6B, by a key operated mechanism. Thus if, as desired, lower base member 6B holds a money-receiving bowl or tray, this bowl or tray can be removed only following use of the key.

The cup holder 60 can either have an integral closed top 260a, so that the replacement cups are fed from below, and are then located preferably by three stops 262a having a cross-section as seen in Figure 5; or cup holder 60 has a removable top 260b, so that the cups can be replaced either from below or from above, with stops 262b having a spherical cross-section (Figure 7). The cup holder support rod 263 with support 265 can have a screw connection with nut 264 to lower base member 6B with retention nut 267; or can have a slot-on connection 266 (Figure 10), with an upstanding arm 270 with holes 272 in which stops 262a, 262b can also be received so as

both to locate the cup holder 60 and the cups. The stops are resilient pegs pressed into openings in the cup holder wall, so that they can be replaced if required.

Preferably the adhesive selected will provide a firm grip between the dispenser and the work surface on which it is mounted at normal room temperatures but will allow the dispenser to be removed when the adhesive is treated. By experiment I have found satisfactory an adhesive with code name CF3/SA/EPDM having specification ASTM/D1056/RE43B/FF228, available from C.B. FROST & Co of Digbeth, Birmingham, England. This adhesive is I understand of the "High Tack" permanent synthetic rubber type, and I have found it most suitable on a tissue carrier coated both sides of thickness 1.5mm (in another embodiment 3.0mm) with a cell finish. The surfaces can be parted when the adhesive is heated, leaving the work surface unstained and unbleached, so that the dispenser can be re-sited if required.

Whilst e.g. my two-part base member is of metal, which can be painted or otherwise coated to the user colour requirement, in an alternative embodiment I provide a base member of synthetic resinous material, suitably ABS plastic. I have experimented however to find a plastic which can carry colours applied by electroplating e.g. red, chrome, gold, and that known as RONFALIN/CP55/GREY available from DSM POLYMERS Ltd of Redditch, England, has proved suitable.

#### CLAIMS

1. A dispenser for solid, flowable materials comprising a hopper in which the materials can be stored, flow control means to regulate the flow of the materials from the hopper, and a base member carrying the hopper and the flow control means, the base member being mountable on a work bench by adhesive means.

2. A dispenser as claimed in Claim 1 in which the adhesive means is temperature dependent, the adhesive means providing less adhesion between the base member and the work bench at an elevated temperature.

3. A dispenser as claimed in Claim 1 or Claim 2 in which the adhesive means is a pad of material having one side adhered to the base member and its other side provided with an adhesive coating.

4. A dispenser as claimed in any of Claims 1-3 in which the adhesive means includes a permanent synthetic rubber adhesive.

5. A dispenser as claimed in Claim 1 in which the flow control means is manually-operable.

6. A dispenser as claimed in Claim 5 which includes separate locking means, the separate locking means preventing manual operation of the flow control means until a token of predetermined physical characteristic is inserted into the locking means.

7. A dispenser as claimed in Claim 6 in which the locking means includes a passageway connecting with the base member, tokens inserted into the locking means passing along the passageway into

the base member and being removable therefrom only after removal of the hopper from the base member.

8. A dispenser as claimed in Claim 6 or Claim 7 in which the separate locking means is located by a retainer, the retainer being between the locking means and the hopper to prevent removal of the locking means until the hopper is removed.

9. A dispenser as claimed in Claim 1 in which the flow control means includes a supply plate having a peripheral edge gear.

10. A dispenser as claimed in Claim 9 in which the peripheral edge gear is engaged by a gear wheel coupled to a manually-rotatable operating handle.

11. A dispenser as claimed in any preceding Claim in which the base member carries a holder for units into which the materials can be dispensed.

12. A dispenser as claimed in Claim 1 which includes a two part base member, a first part of the base member locating the flow control means and a chute leading to a material receptacle outlet, a second part of the base member carrying the adhesive means, the two parts of the base member being separable.

13. A dispenser as claimed in Claim 12 in which the said second part includes a token receptacle, the parts being secured together by a releasable locking arrangement.

14. A dispenser as claimed in Claim 12 in which the flow control means includes a materials supply unit having a plurality of apertures, and a control unit, the control unit being located between the supply unit and the hopper, the supply unit having a peripheral edge gear engageable by a gear wheel coupled to a manually rotatable operating handle whereby an aperture can be aligned with an inlet to the chute.

15. A dispenser for solid flowable materials comprising a hopper means adapted to hold available a quantity of the materials to be dispensed, flow control means to regulate the flow of materials from the hopper and thus the rate of reduction of the quantity of materials in the hopper, and a base member carrying the hopper and flow control means, the control means being token releasable, passageway means connecting the control means and the base member whereby the said tokens can pass into the base member, lock means on the base member, the tokens being removable from the base member only after release of the lock means, and replenishment means independent of the release of the lock means to increase the said available quantity of materials.

16. A dispenser as claimed in claim 15 in which the replenishment means includes an externally-releasable cap for the hopper for recharging of the existing container.

17. A dispenser constructed and arranged substantially as described with reference to Figures 1-3 or Figure 4 or Figures 5-10, or Figures 5-8 with Figures 11-13, or Figures 5-8 with Figure 14.